

# PATENT ABSTRACTS OF JAPAN

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## (54) SINGLE-PHOTON GENERATION DEVICE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To emit a single photon to the outside of a device at a set time.

**SOLUTION:** When a quantum dot 4 is irradiated with excitation optical pulses 26, only one electron is excited in the quantum dot, and the excited electron is recombined so as to generate one photon. Since a very small sphere 6 which constitutes a resonator has a mode which resonates with the photon, the photon exists inside the very small sphere 6, and the very small sphere 6 is set to a resonance state. When a second photoelectric switch 12 is irradiated with second control optical pulses 20, the second photoelectric switch 12 generates a voltage so as to be applied to a connection member 8. As a result, the refractive index of the connection member 8 is changed. Consequently the reflection factor in the boundary face between the very small sphere 6 and the connection member 8 is lowered, the photon inside the very small sphere 6 can be transmitted to the side of the connection member 8, and it enters a waveguide 10 through the connection member 8 so as to be emitted to the outside of the device by the waveguide 10.

